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A CASE OF DERMAL LEISHMANIASIS FROM S. AMERICA, WITH SOME REMARKS
ON THE STRUCTURE OF THE PARASITE AND ITS CULTURE.

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(With one Plate.)

THE number of recorded instances of this disease from S. America are sufficiently few to justify the description of the present case, which was admitted to the Branch Hospital of the Seamen's Hospital Society at the Royal Albert Dock, under the care of Sir Patrick Manson, to whom I am indebted for the opportunity to investigate the case and to publish the following note.

The presence of leishmania in skin lesions in S. America was first demonstrated by Lindenberg, Carini, and Paranhos in 1909 in Brazil. In this year also a form of dermal leishmaniasis was shown by Tonin, Heckenroth, and Nattan-Larrier to occur in French Guiana, where it is known as Pian-Bois. In 1910 other cases were described by Matta and Rao on the Upper Amazon, and by Darling in Panama. Werner (1911) described a case in Rio de Janeiro; and Carini and Splendore have shown that there exists in Brazil a form of leishmaniasis which may affect the mouth and nasal cavities. Flu has described other cases from the three Guianas, and Escomel has lately described a disease known as espundia, which occurs in Peru and Bolivia. In smears from mouth and skin lesions obtained from Escomel, Laveran and Nattan-Larrier have found leishmania, and they describe a feature in the structure of the parasite which they think may indicate that it is a distinct species. This matter will be referred to again below.

The present case is that of an Englishman who travelled through Peru and Bolivia, from Lake Titicaca to the Tambopata river, and thence to its junction with the Rio Madre de Dios. He entered the country in July 1911, and the first indication of a sore was a small red spot over the right eye which appeared at the beginning of January 1912. On the way home this increased in size and an attempt was made to excise it, but with no good result. Later on another sore developed near the outer corner of the right eye.

Description of the Case.

The patient was first seen at the beginning of March. A photograph taken at this time is reproduced on the accompanying plate. He then had a large sore about three centimetres in diameter and situated over the right eye and root of the nose, with its lower limit in the eyebrow. It was in the

form of a flat-topped tumour raised about half a centimetre above the surrounding skin. The surface was covered with granulations and fissures which showed a tendency to become scabbed over. On removal of the scab there escaped blood and pus which occupied the fissures between the granulations. The margin was covered with red oedematous skin which shelved down rather suddenly to the normal level. The surrounding skin was injected and inflamed for some distance around the sore. The second sore, at the outer corner of the right eye, was of a different character. Instead of being a raised tumour it was a punched-out ulcer measuring about $1 \times .5$ centimetre. It was discharging a yellowish fluid. It may be stated that leishmania were found in both these sores. In addition to the two sores there was some involvement of the lymphatic system. There were two hard nodules below the skin of the eyebrow. These were not adherent to the structures below but moved with the skin. They were not painful on pressure. Running from the inner corner of the right eye across the cheek to a point just in front of the angle of the jaw was a hard cord, which was probably a much thickened lymphatic vessel. The lymphatic glands below the jaw were enlarged and formed a hard mass which was distinctly visible. Another and similarly thickened lymphatic vessel ran from the outer end of the right eyebrow across the face to the pre-auricular glands. There was considerable oedema of the upper and lower eyelids on the right side. No attempt was made to discover if leishmania were present in the lymphatic glands, so it is impossible to say whether this glandular enlargement was due merely to septic absorption or to the specific parasite. There was very little, if any, pain accompanying these various lesions, nor were there any noticeable constitutional symptoms. On one occasion while travelling in Peru, where the disease was contracted, the patient suffered from fever, which was relieved by quinine.

In character the sores themselves show no differences from those which I have seen in Bagdad and other parts of Asiatic Turkey. Both the raised and punched-out types occur in the East, and they present exactly the same features as in this case, with the exception of the somewhat extensive involvement of the lymphatic system, which I have not seen before. In this connection it is interesting to note that Werner has described a somewhat similar condition of the glands in a case seen by him in Rio de Janeiro. In Werner's cases parasites were found in distant lymphatic glands.

The disease described by Escomel from Peru and Bolivia, under the name of espundia, commences with a primary lesion in the skin. This heals, but eventually, it may be after several years, lesions appear in the mouth and nose and produce a profound cachexia from which the patient may die. It is in cases of this disease that Laveran and Nattan-Larrier have discovered the leishmania. It is impossible to say whether the present case is one of espundia or not. If so the two sores must be regarded as the primary lesions—the “chancre espundique” of Escomel.

*Description of the Parasite and some remarks on a supposed peculiarity
in the S. American Leishmania.*

I was successful in finding leishmania in both sores. Material was obtained by removing tissue through the unulcerated margin of the sores. The discharge from the sores themselves contained so many bacteria and so much pus that, if leishmania were present they were obscured from view.

[Journ. Lond. School Trop. Med., Vol. I. Pt. III., 1912.]



Photo by R. McKay.

A CASE OF LEISHMANIASIS FROM S. AMERICA.

In size and shape the parasites corresponded exactly with those that I have seen in the sores of Asiatic Turkey. Typical oval or oat-shaped parasites showing both the rounded and large trophonucleus and the deeply staining dot or rod-like kinetonucleus were seen. In addition to the typical parasites there occurred many elongated and peculiarly shaped forms. These I have figured in my report on the Eastern Sore *, and I have pointed out that in the dermal lesions the variety in the shape of the leishmania is much greater than in the case of those obtained from cases of Kala Azar. This fact would enable one to recognise a smear of Oriental Sore from one from a case of Kala Azar. The same can be said of the parasites obtained from the case of the S. American sore now under consideration.

As I have already mentioned, Laveran and Nattan-Larrier were the first to describe leishmania from the disease in Peru and Bolivia. These observers noted a feature in the parasites which they thought might be of specific importance. In all the films examined (a series of films sent to Paris by Escomel) the authors noted that the trophonucleus, instead of being rounded and separated from the margin of the leishmania, was very much flattened out against the fine limiting membrane of the parasite. In many instances it was reduced to a thin layer of chromatin lying along one side of the parasite, and often extending round one end. They assert that in their preparations this appearance is shown by all the parasites, while an examination of films of the Eastern Sore has failed to reveal this peculiarity. They suggest on this account that the S. American leishmania may be a distinct species. In films made from the present case I have found many of the forms described by these observers, but, in addition, there occur (both in and out of the cells) the usual typical leishmania without any nuclear flattening; moreover, between these and the typical forms all intermediate stages can be traced. Further, on looking through films made in Bagdad, I find that the same type of parasite exists there also. In one film the appearances were especially striking, for in one part of the film all the parasites showed this flattening of the nucleus, while in other parts they were normal. I cannot avoid the conviction that this flattening of the nucleus is the result of some change undergone by the parasite in the drying process of the film. In some instances it may be a feature of some degeneration while still in the tissues, but there results this important fact that the peculiarity described by Laveran and Nattan-Larrier occurs both in films made from sores of the East as well as in those from S. America, so that this feature cannot be held to indicate a difference in the species of leishmania.

Culture of the Parasite.

This was done in the now well-known N.N.N. medium. The skin over the margin of the large sore on the patient's forehead was carefully cleaned with acetone and ether, and finally painted with alcoholic iodine solution. By means of a fine glass pipette forced through the skin material was obtained for inoculating the tubes. In all, six tubes were thus inoculated, and it is interesting to note that though the sore was discharging a very foul material containing much pus and innumerable bacteria, an uncontaminated culture of flagellates resulted in every tube. This fact speaks well for the sterilising effect of the cleansing methods adopted. In all cases flagellates

* "Oriental Sore in Bagdad, &c." *Parasitology*, October 24th, 1911.

were first seen on about the tenth day. The cultures increased in richness, large clumps of organisms appeared, and by subculture—now at the ninth generation—the culture has been maintained for over two months. The organism grows readily both in the condensation water in this medium as well as on the surface of the agar. In the latter situation the flagellates tend to be plumper and rounder than when they are growing in the liquid medium. Comparing these cultures with those of the parasite of the Eastern Sore now obtained by many observers, including the present writer, I cannot find that any differences exist between the two. There is a tendency to the production of two types of flagellates. One is pear-shaped, with little difference in its length and breadth, and with the flagellum springing from its blunt end. The other form is elongated, with, however, the end bearing the flagellum more obtuse than the other. In cultures every intermediate form between these two exist, as also every shape of non-flagellated organism. All these forms were found in cultures obtained by me from the Bagdad Sores. It appears, however, that certain differences between the cultures of the *Leishmania tropica* and those from cases of Kala Azar do exist. Dr. Row has pointed out these differences, and I am at present engaged in testing this point.

Treatment of the Sore.

The case under consideration has been treated in two ways. The small sore at the outer corner of the eye received daily applications of the ointment recommended by Cardamatis and Melissidis, and consisting of equal parts of methylene blue, lanoline, and vaseline. At the same time the patient was given subcutaneous injections of killed cultures according to Dr. Row's method. On the first occasion (March 30) the patient received $\frac{3}{8}$ c.cm. of rich culture to which had been added forty minutes before five drops of glycerine. This had the immediate effect of rendering the flagellates immobile, and after the expiry of forty minutes it was concluded that they were dead. Some time after a single moving flagellum was seen in some of the fluid remaining, so that the parasites could not have been all killed at the time of injection. On April 9 a second injection of .5 c.cm. of culture mixed with .5 c.cm. of glycerine an hour before were given. On neither occasion was there any constitutional disturbance following these doses. The glycerine mixture was inoculated on each occasion on to blood agar tubes, but no growth occurred, so that though a motile organism was seen on the first occasion the parasites in the mixture were too much altered to grow.

After the second injection the small sore commenced to heal, though it had been showing a tendency to spread towards the eye, and a month later it had practically closed over with skin. This sore was being treated at the time with the ointment, so it is impossible to say which was the curative agent. The methylene blue ointment was then applied to the large sore, which has commenced to improve. It has become less prominent, having now been reduced to the level of the surrounding skin. The margin is not œdematous or raised, and there is little inflammation. On two occasions since the commencement of the treatment I have failed to find parasites in the material obtained from the sore. The case is still under observation and will form the subject of a future report if the results justify this.

Successful Inoculation of a Dog.

With material obtained from the sore a small baboon * was inoculated in the skin of the nose and the tips of the ears. A dog was similarly inoculated in two places on the nose and on each ear. Though three months have elapsed since the inoculation the monkey has shown no signs of infection. The dog, however, has developed a sore on each ear, and in these leishmania have been found. The incubation was two months.



